WHAT WE CLAIM IS :

1. A motor condition detection apparatus for detecting a locking condition of the motor comprising:

first voltage detection means for detecting motor driving voltage of driving electric source supplied to the motor;

second voltage detection means for detecting voltage of a control device for driving and controlling the motor;

voltage difference calculation means for calculating voltage difference between the motor driving voltage and the voltage of the control device; and

first motor locking determination means for determining the locking condition of the motor based on the voltage difference during driving of the motor and the first motor locking determination means determining that the motor is locked when the voltage difference is higher than a predetermined voltage.

2. A motor condition detection apparatus according to claim 1 further comprising:

motor driving stopping means for stopping driving the motor after the first motor locking determination means provisionally determines that the motor is locked;

regenerative voltage detection means for detecting regenerative voltage of the motor when driving of the motor is stopped; and

second motor locking determination means for determining the locking condition of the motor based on the regenerative voltage of the motor.

3. A motor condition detection apparatus according to claim 2, wherein the motor driving stopping means stops driving the motor in a predetermined period after the first motor locking determination means provisionally determines that the motor is locked.

4. A motor condition detection apparatus according to claim 2, wherein the regenerative voltage detection means integrates the regenerative voltage detected within a predetermined period after driving of the motor is stopped to calculate an integration value and the second motor locking determination means finally determines that the motor is locked when the integration value is smaller than a standard value.

5. A motor condition detection apparatus according to claim 2, wherein the regenerative voltage detection means averages the regenerative voltage detected

within a predetermined period after driving of the motor is stopped to calculate an average value and the second motor locking determination means finally determines that the motor is locked when the average value is smaller than a standard value.

6. A motor condition detection apparatus according to claim 1, wherein the first motor locking determination means determines that the motor is locked when the condition in which the voltage difference is higher than the predetermined voltage continues for a predetermined period.

7. A motor condition detection apparatus according to claim 1 further comprising ripple intensity calculation means for calculating ripple intensity of the motor driving voltage, wherein the first motor locking determination means determines that the motor is locked when the voltage difference is higher than the predetermined voltage and when the ripple intensity is smaller than a predetermined value.

8. A motor condition detection apparatus according to claim 7, wherein ripple intensity calculation means averages an absolute value of the ripple within a predetermined period to calculate the ripple intensity.

9. A motor condition detection apparatus according to claim 1, wherein the motor is connected to an electric source through a connecting line including a relay, the first voltage detection means connects to the connecting line between the relay and the motor and the second voltage detection means connects to the connecting line between the electric source and the relay.

10. A motor condition detection apparatus for detecting a locking condition of the motor comprising:

voltage detection means for detecting motor driving voltage of driving electric source supplied to the motor;

ripple intensity calculation means for calculating ripple intensity of the motor driving voltage; and

first motor locking determination means for determining the locking condition of the motor based on the ripple intensity of the motor driving voltage during driving of the motor and the first motor locking determination means determining that the motor is locked when the ripple intensity is smaller than a predetermined value.

11. A motor condition detection apparatus according to claim 10 further

comprising:

motor driving stopping means for stopping driving the motor after the first motor locking determination means provisionally determines that the motor is locked;

regenerative voltage detection means for detecting regenerative voltage of the motor when driving of the motor is stopped; and

second motor locking determination means for determining the locking condition of the motor based on the regenerative voltage of the motor.

12. A motor condition detection apparatus according to claim 10, wherein ripple intensity calculation means averages an absolute value of the ripple within a predetermined period to calculate the ripple intensity.

13. A motor condition detection apparatus for detecting a locking condition of the motor comprising:

first voltage detection means for detecting motor driving voltage of driving electric source supplied to the motor;

motor driving stopping means for stopping driving the motor based on the motor driving voltage during driving condition of the motor;

regenerative voltage detection means for detecting regenerative voltage of the motor when driving the motor is stopped; and

motor locking determination means for determining the locking condition of the motor based on the regenerative voltage of the motor.

14. A motor condition detection apparatus according to claim 13 further comprising second voltage detection means for detecting voltage of a control device for driving and controlling the motor and voltage difference calculation means for calculating voltage difference between the motor driving voltage and the voltage of the control device, and wherein the motor driving stopping means stops driving the motor when the voltage difference is higher than a predetermined voltage.

15. A motor condition detection apparatus according to claim 13 further comprising ripple intensity calculation means for detecting ripple intensity of the motor driving voltage and wherein the motor driving stopping means stops driving the motor when the ripple intensity is smaller than a predetermined value.

16. A motor condition detection method for detecting a locking condition of the motor comprising steps of:

detecting motor driving voltage of driving electric source supplied to the

motor;

detecting voltage of a control device for driving and controlling the motor;

calculating voltage difference between the motor driving voltage and the voltage of the control device; and

first determining the locking condition of the motor based on the voltage difference during driving of the motor.

17. A motor condition detection method according to claim 16 further comprising steps of:

stopping driving the motor after the first determining step provisionally determines that the motor is locked;

detecting regenerative voltage of the motor when driving of the motor is stopped; and

second determining the locking condition of the motor based on the regenerative voltage of the motor.

18. A motor condition detection method according to claim 17, wherein the regenerative voltage detecting step integrates the regenerative voltage detected within a predetermined period after driving of the motor is stopped to calculate an integration value and the second determining step finally determines that the motor is locked when the integration value is smaller than a standard value.

19. A motor condition detection method according to claim 17, wherein the regenerative voltage detecting step averages the regenerative voltage detected within a predetermined period after driving of the motor is stopped to calculate an average value and the second determining step finally determines that the motor is locked when the average value is smaller than a standard value.

20. A motor condition detection method according to claim 16 further comprising a step of calculating ripple intensity of the motor driving voltage, wherein the first determining step provisionally determines that the motor is locked when the voltage difference is higher than the predetermined voltage and when the ripple intensity is smaller than a predetermined value.

21. A motor condition detection method for detecting a locking condition of the motor comprising steps of:

detecting motor driving voltage of driving electric source supplied to the motor;

detecting ripple intensity of the motor driving voltage; and

first determining the locking condition of the motor based on the ripple intensity of the motor driving voltage during driving of the motor.

22. A motor condition detection method according to claim 21 further comprising steps of:

stopping driving the motor after the first determining step provisionally determines that the motor is locked;

detecting regenerative voltage of the motor when driving of the motor is stopped; and

second determining the locking condition of the motor based on the regenerative voltage of the motor.

23. A vehicle height control apparatus for controlling a vehicle height comprising:

a height control device having an air pressure chamber and controlling the vehicle height by air pressure supplied to or discharged from the air pressure chamber;

a compressor supplying pressurized air to the air pressure chamber;

a motor driving the compressor;

a control valve provided in an air line formed between the compressor and the air chamber to control the air pressure in the air pressure chamber;

an atmosphere releasing valve provided in the air line between the control valve and the compressor so as to release the air pressure in the air pressure chamber to an atmosphere;

a height detection sensor detecting the vehicle height;

control device controlling the motor, the control valve and the atmosphere releasing valve based on the vehicle height detected by the height detection sensor; and

the motor condition detection apparatus according to claim 1.

24. A vehicle height control apparatus for controlling a vehicle height comprising:

a height control device having an air pressure chamber and controlling the vehicle height by air pressure supplied to or discharged from the air pressure chamber;

a compressor supplying pressurized air to the air pressure chamber;

a motor driving the compressor;

a control valve provided in an air line formed between the compressor and the air chamber to control the air pressure in the air pressure chamber;

an atmosphere releasing valve provided in the air line between the control valve and the compressor so as to release the air pressure in the air pressure chamber to an atmosphere;

a height detection sensor detecting the vehicle height;

control device controlling the motor, the control valve and the atmosphere releasing valve based on the vehicle height detected by the height detection sensor; and

the motor condition detection apparatus according to claim 10.

25. A vehicle height control apparatus for controlling a vehicle height comprising:

a height control device having an air pressure chamber and controlling the vehicle height by air pressure supplied to or discharged from the air pressure chamber;

a compressor supplying pressurized air to the air pressure chamber;

a motor driving the compressor;

a control valve provided in an air line formed between the compressor and the air chamber to control the air pressure in the air pressure chamber;

an atmosphere releasing valve provided in the air line between the control valve and the compressor so as to release the air pressure in the air pressure chamber to an atmosphere;

a height detection sensor detecting the vehicle height;

control device controlling the motor, the control valve and the atmosphere releasing valve based on the vehicle height detected by the height detection sensor; and

the motor condition detection apparatus according to claim 13.